

Justification

The demand for appropriate alternative plant materials for the landscaping needs of the southwest United States necessitates the evaluation of low-input nativegrasses and alternative groundcover plants in the low desert of Arizona.

Objectives

1. Assess the performance of alternative groundcovers and nativegrasses in the low desert southwest United States,
2. Create local research-based information about the feasibility of growing new groundcovers and nativegrasses,
3. Enhance the turf and landscape managers' awareness about the characteristics of nativegrasses and alternative groundcovers.

Methods

Studies were initiated with various nativegrass species and two groundcovers in May 2016 at Camelback Golf Club in Scottsdale, AZ; in June 2017 at Briarwood Country Club in Sun City West, AZ; and in June 2019 at Wigwam Golf Club in Litchfield Park, AZ (Table 1). Treatment plots measuring 2.8, 3.3, and 6 m² were arranged in a randomized complete block design with three or four replicates. Overhead irrigation varied and was adjusted for summer, fall, winter, and spring. Data for percent ground cover, height and the overall plant quality evaluation for greenness and vigor were collected. Data were analyzed using JMP ver. 14.3 statistical software and means compared using Student's t-test.

Table 1. Nativegrasses and groundcovers planted for landscapes in the southwest U.S.A.

Common Name	Scientific name	Seed rate (kg/ha)
Alkali sacaton	<i>Sporobolus airoides</i>	3.36
Alkali muhly	<i>Muhlenbergia asperifolia</i>	1.35
Blue grama	<i>Bouteloua gracilis</i>	4.48
Buffalograss	<i>Bouteloua dactyloides</i>	244.00
Teff	<i>Eragrostis tef</i>	5.60
Plains lovegrass	<i>Eragrostis intermedia</i>	1.12
Big galleta	<i>Hilaria rigida</i>	195.00
Sand dropseed	<i>Sporobolus cryptandrus</i>	1.12
Spike dropseed	<i>Sporobolus contractus</i>	1.12
Desert zinnia	<i>Zinnia acerosa</i>	2.47
Kurapia	<i>Lippia nodiflora</i>	17628*
Bluestem, little "Cimarron"	<i>Schizachyritm scoparium</i>	5.50
Bluestem, Sand "Chet"	<i>Andropogon halii</i>	5.50
Grama, Sideoats "Vaughn"	<i>Bouteloua eurtipendula</i>	12.45
Galleta, "Viva"	<i>Hilaria jamesii</i>	471.00
Lovegrass Sand, "Bend"	<i>Eragrostis trichodes</i>	3.40
Purple threeawn	<i>Aristida purpurea</i>	10.00

* Number of plugs planted

Results

- Species showed variable performance across the seasons and over locations;
- *Lippia nodiflora*, *Sporobolus airoides*, *Bouteloua gracilis*, *Eragrostis intermedia*, and *Muhlenbergia asperifolia*, remained **green** the whole year;
- *Lippia nodiflora*, *Hilaria rigida*, and *Bouteloua gracilis* exhibited the best rate of establishment and surface coverage at all locations;
- The white variety of Kurapia more rapidly spread across the surface area but shorter in height compared to the pink variety.
- The potential of Kurapia as a groundcover is promising

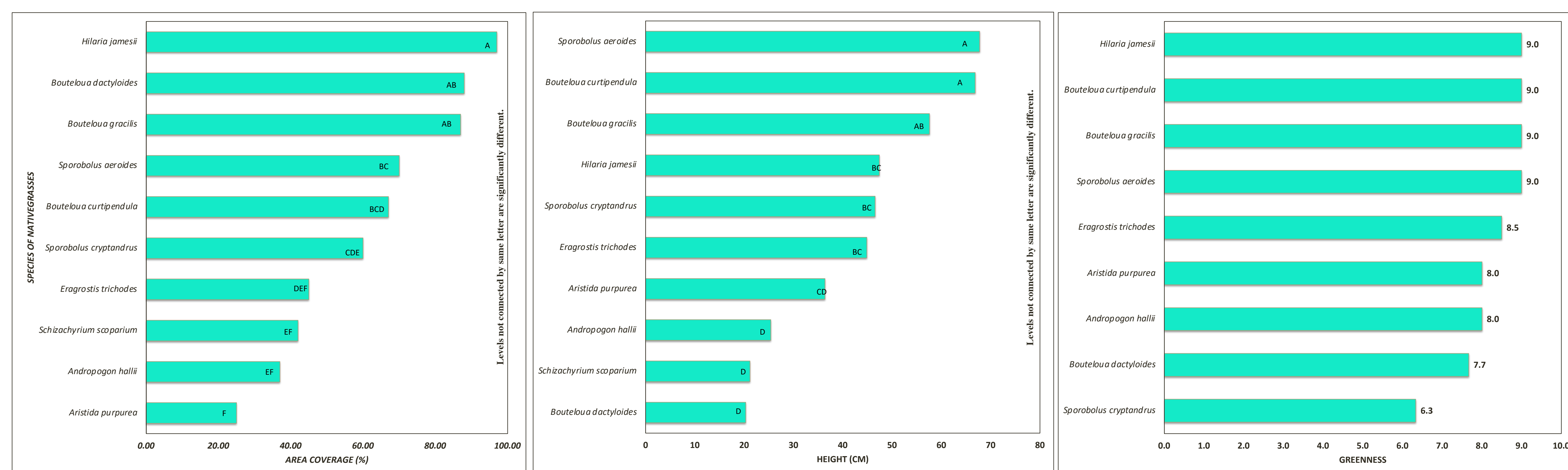


Figure 1. The performance of nativegrasses (12 WAP) for surface area coverage (left), height (middle), and greenness (right) at Litchfield Park, AZ in 2019.

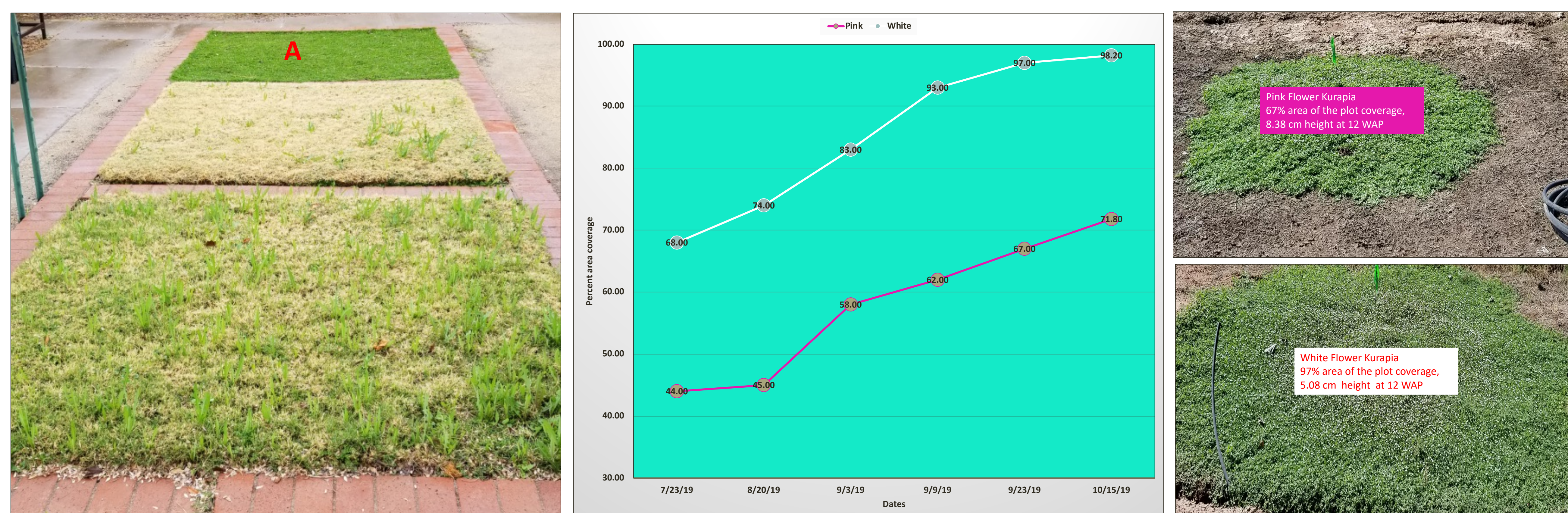


Figure 2. The ability of Kurapia groundcover (A) to suppress weeds and remain green compared to grasses at Phoenix, AZ in Feb 2019 (left). White and pink flowered varieties of Kurapia for surface area coverage (middle) and height (right) in Litchfield Park, AZ in 2019.



Figure 3. Establishment of nativegrasses and Kurapia as early as 7 weeks after planting (planted May 31, 2016) at Scottsdale, AZ, (left), 14 weeks after planting (planted June 6, 2017) at Sun City West, AZ (middle), and 8 weeks after planting (planted June 25, 2019) in Litchfield Park, AZ (right). Note the differences in greenness, coverage and uniformity among the locations.

Conclusions

- Uniform irrigation is required to obtain even establishment and full area coverage;
- All species except, *Zinnia acerosa* emerged and established well, but showed variable performance across the seasons and over locations;
- The potential of Kurapia as a groundcover is promising;
- Differential growth between tall and short stature nativegrasses provided information for potential sites where each type of grass could be utilized;
- Continued research replicated over locations and seasons are needed to obtain more reliable information about each species desirable growth characteristics, their required inputs, and pest management requirements.

Acknowledgements

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